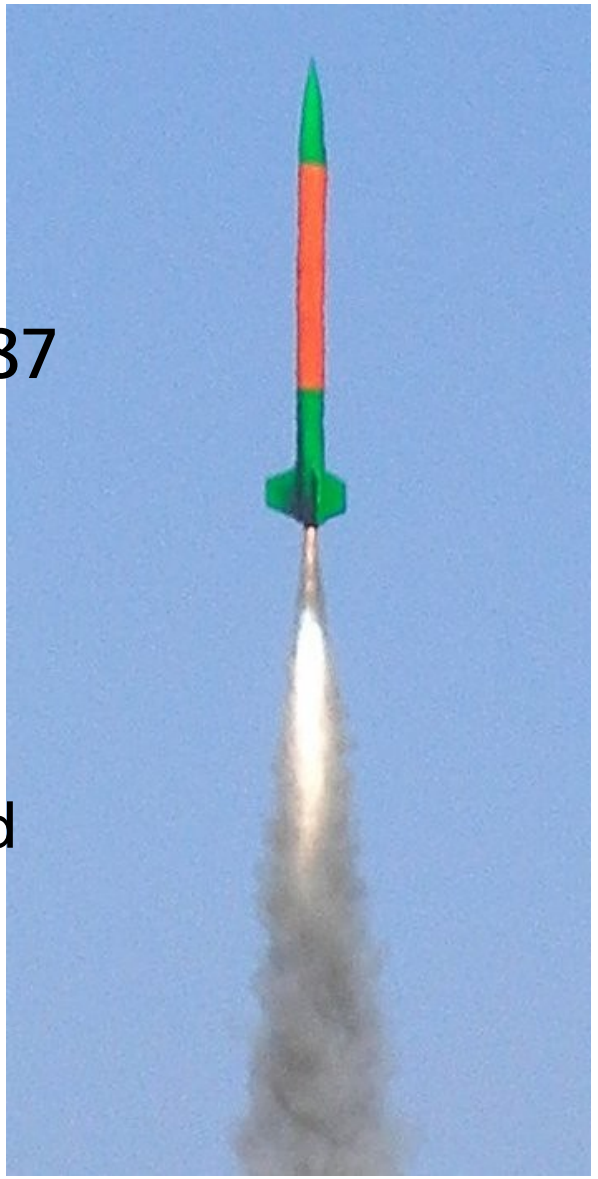
Sustaining X Development

Keith Packard
Distinguished Technologist
HP

Who am I



- Senior engineer at HP
- Free software developer since 1987
  - GDB, GCC, X, Linux, …
- Rocketry Enthusiast
- X developer since 1987
  - Worked at MIT on X 1988-2002
  - Member of X.org Foundation board
  - Director of Freedesktop.org
- Debian developer since 2004
  - Member of Technical Committee

What is X

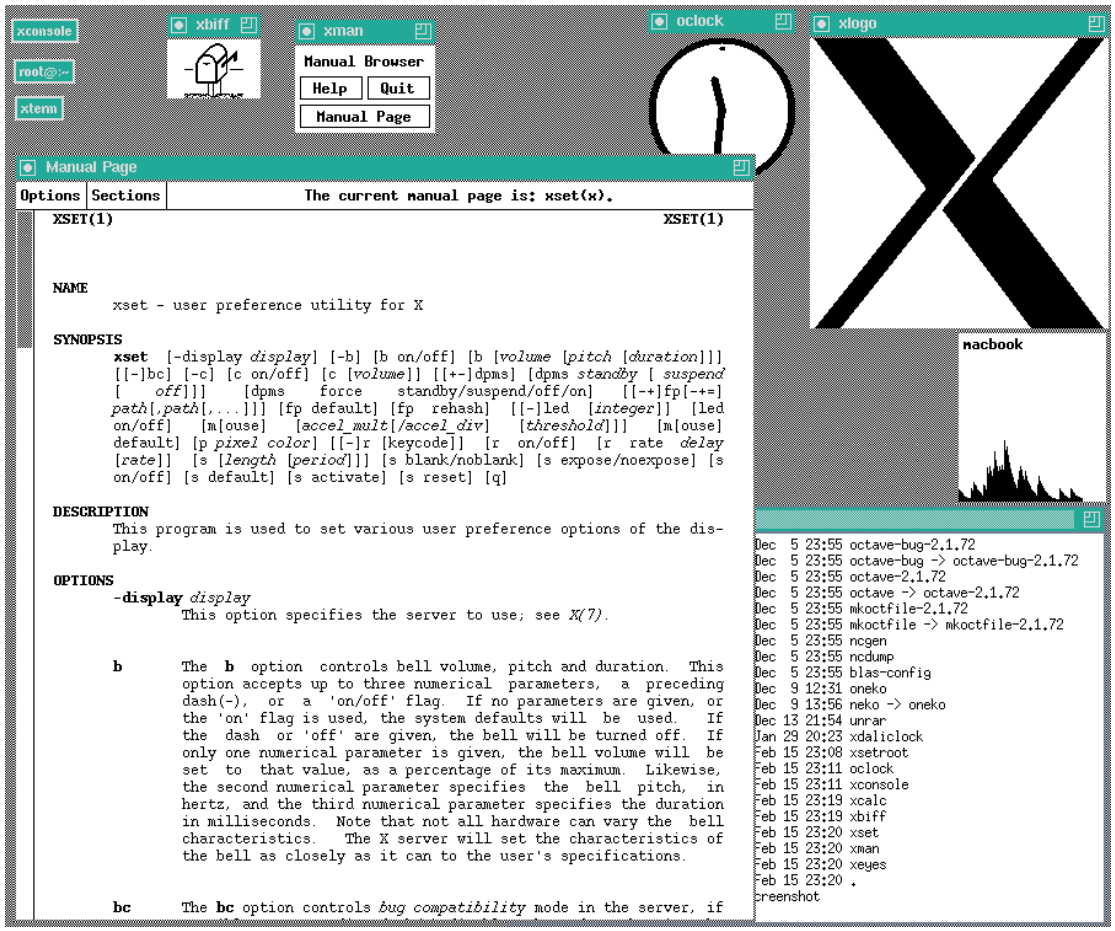
- A Window System
  - Multiplexes applications on one screen
  - De-multiplexes user actions to applications
- A Free Software project
  - Uses the MIT license (similar to BSD)
- A community
  - Developers
  - Corporations
  - Users

The early history of X

The MIT X Consortium

- Hosted in MIT's Laboratory for Computer Science
- Staff dedicated to X development
- Industry consortium

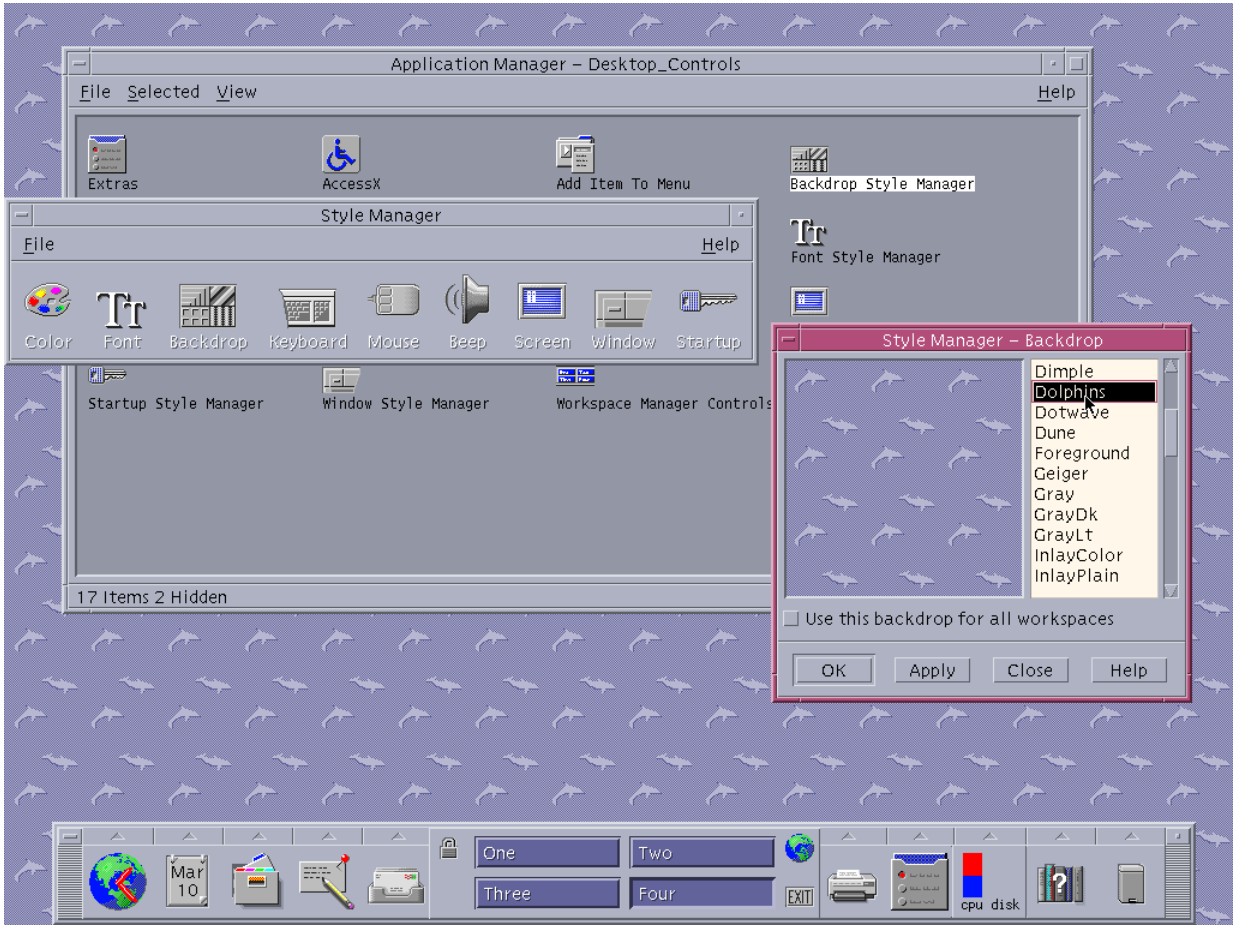
Early X11


xconsole
root@:~
xterm
xbiff
xman
Manual Browser
Help
Quit
Manual Page
oclock
xlogo
Manual Page
Options
Sections
The current manual page is: xset(x).
XSET(1)
XSET(1)
NAME
xset - user preference utility for X
SYNOPSIS
xset [-display display] [-b] [b on/off] [b [volume [pitch [duration]]] [[-]bc] [-c] [c on/off] [c [volume]] [[+-]dpms] [dpms standby [suspend [off]]] [dpms force standby/suspend/off/on] [[-+]fp[-+=] path[,path[,...]]] [fp default] [fp rehash] [[-]led [integer]] [led on/off] [m[ouse] [accel_mult[/accel_div] [threshold]]] [m[ouse] default] [p pixel color] [[-]r [keycode]] [r on/off] [r rate delay [rate]] [s [length [period]]] [s blank/noblank] [s expose/noexpose] [s on/off] [s default] [s activate] [s reset] [q]
DESCRIPTION
This program is used to set various user preference options of the display.
OPTIONS
-display display
This option specifies the server to use; see X(7).
b
The b option controls bell volume, pitch and duration. This option accepts up to three numerical parameters, a preceding dash(-), or a 'on/off' flag. If no parameters are given, or the 'on' flag is used, the system defaults will be used. If the dash or 'off' are given, the bell will be turned off. If only one numerical parameter is given, the bell volume will be set to that value, as a percentage of its maximum. Likewise, the second numerical parameter specifies the bell pitch, in hertz, and the third numerical parameter specifies the duration in milliseconds. Note that not all hardware can vary the bell characteristics. The X server will set the characteristics of the bell as closely as it can to the user's specifications.
bc
The bc option controls bug compatibility mode in the server, if
macbook
Dec 5 23:55 octave-bug-2.1.72
Dec 5 23:55 octave-bug -> octave-bug-2.1.72
Dec 5 23:55 octave-2.1.72
Dec 5 23:55 octave -> octave-2.1.72
Dec 5 23:55 mkoctfile-2.1.72
Dec 5 23:55 mkoctfile -> mkoctfile-2.1.72
Dec 5 23:55 ncgen
Dec 5 23:55 ncdump
Dec 5 23:55 blas-config
Dec 9 12:31 oneko
Dec 9 13:56 neko -> oneko
Dec 13 21:54 unrar
Jan 29 20:23 xdaliclock
Feb 15 23:08 xsetroot
Feb 15 23:11 oclock
Feb 15 23:11 xconsole
Feb 15 23:19 xcalc
Feb 15 23:19 xbiff
Feb 15 23:20 xset
Feb 15 23:20 xman
Feb 15 23:20 xeyes
Feb 15 23:20 .
creenshot

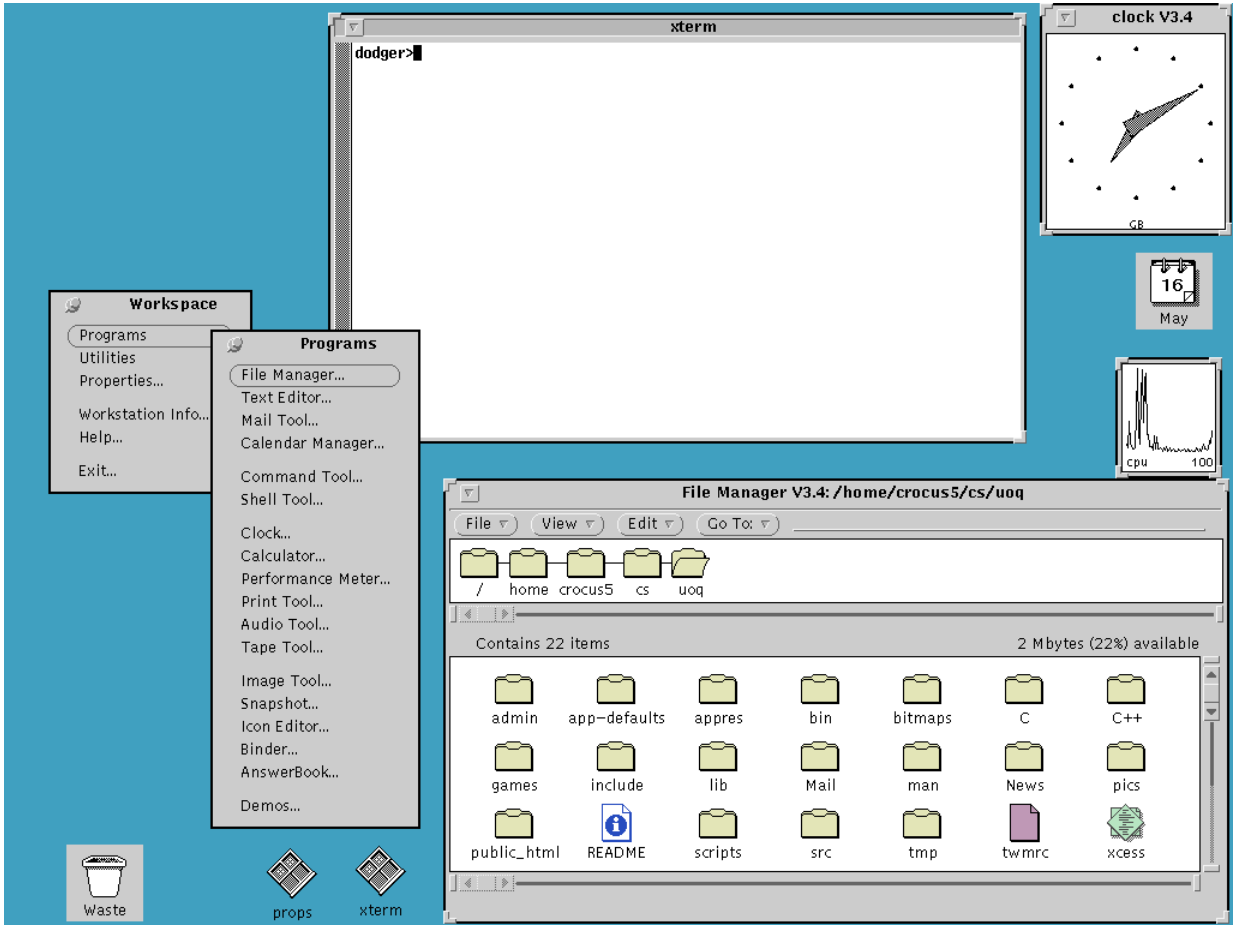
Unix Workstations

X Terminals

The Unix Wars



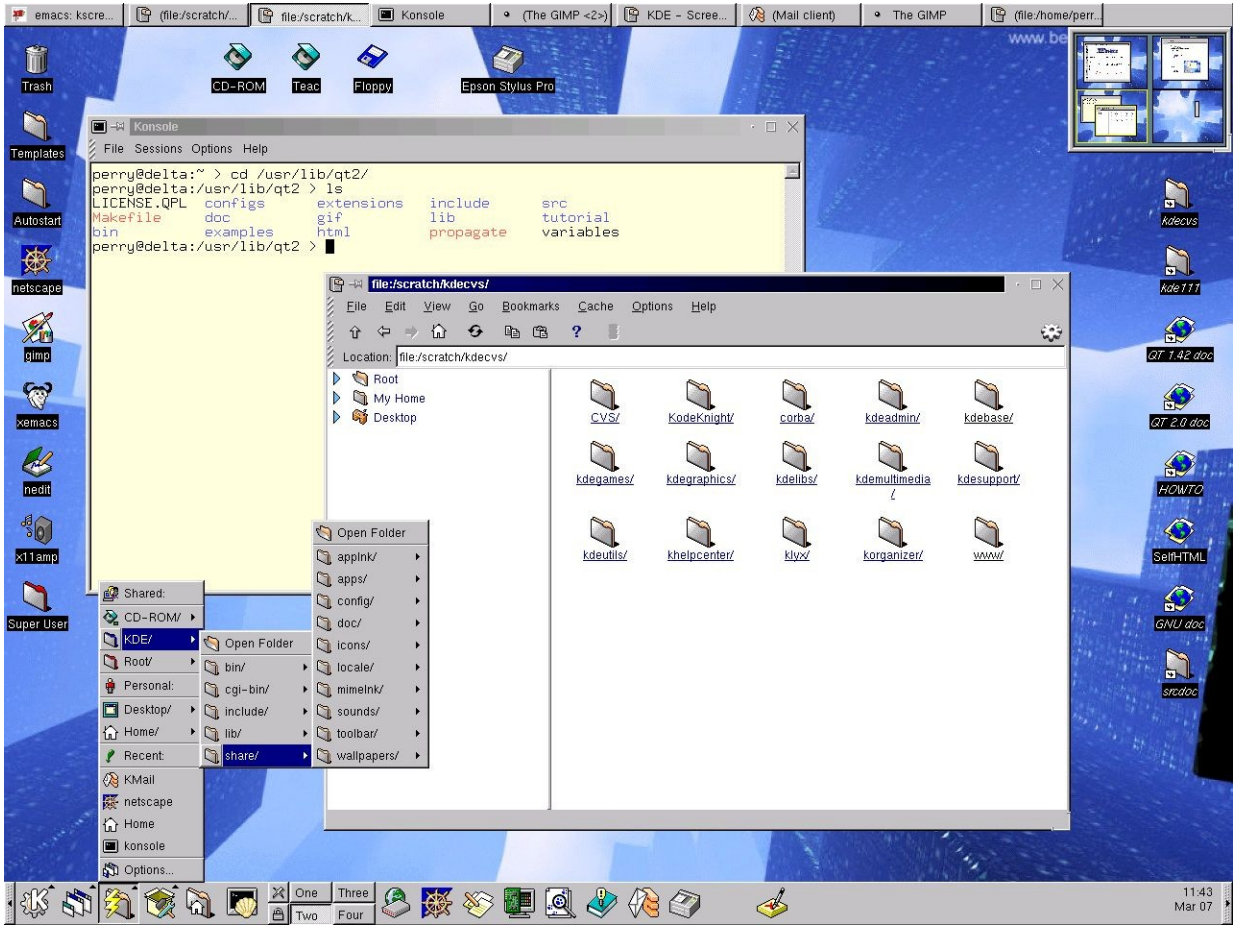
The Unix Wars



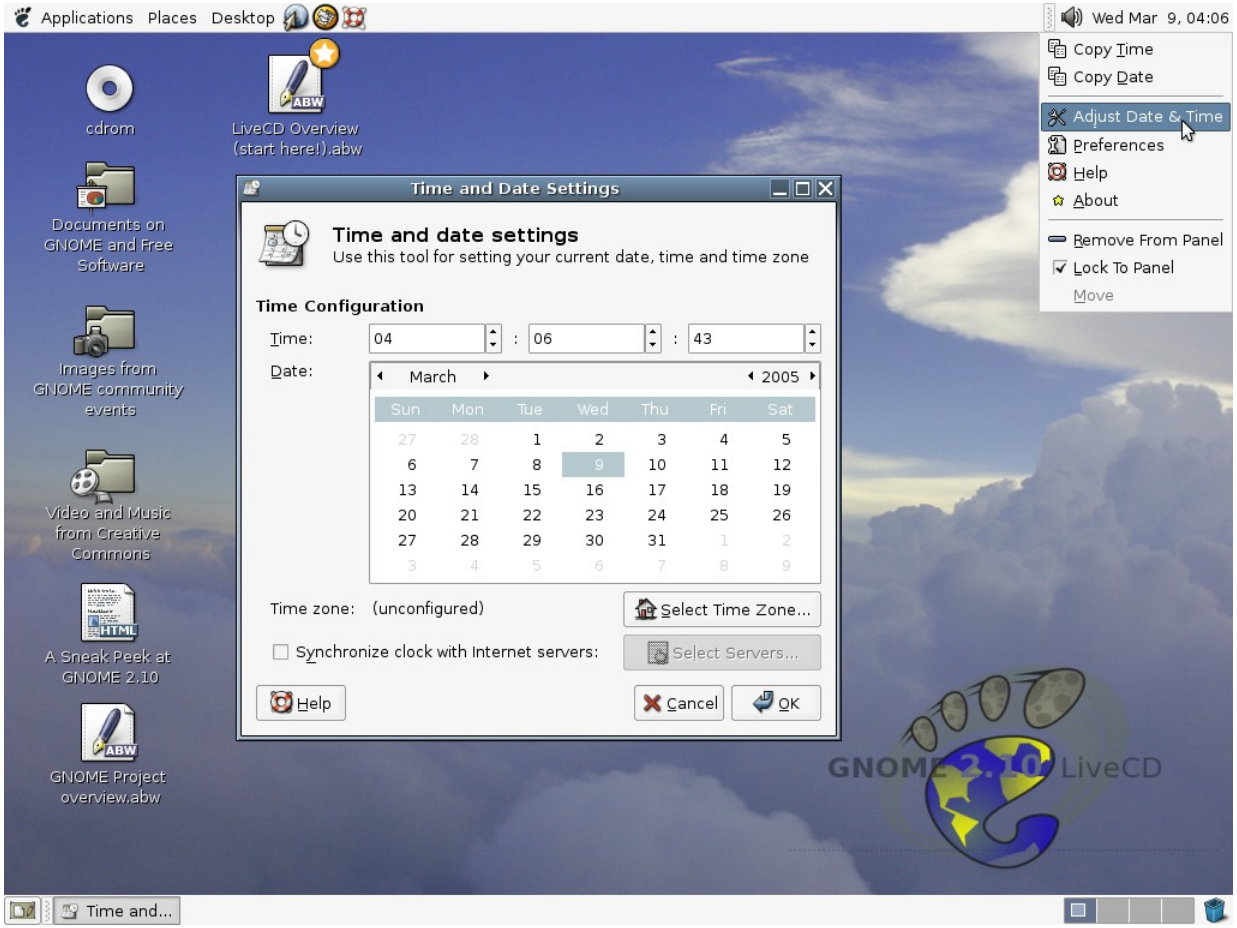
XFree86

- The rebel alliance
- Free software X for various x86-based POSIX systems
- Locked out of the X Consortium process

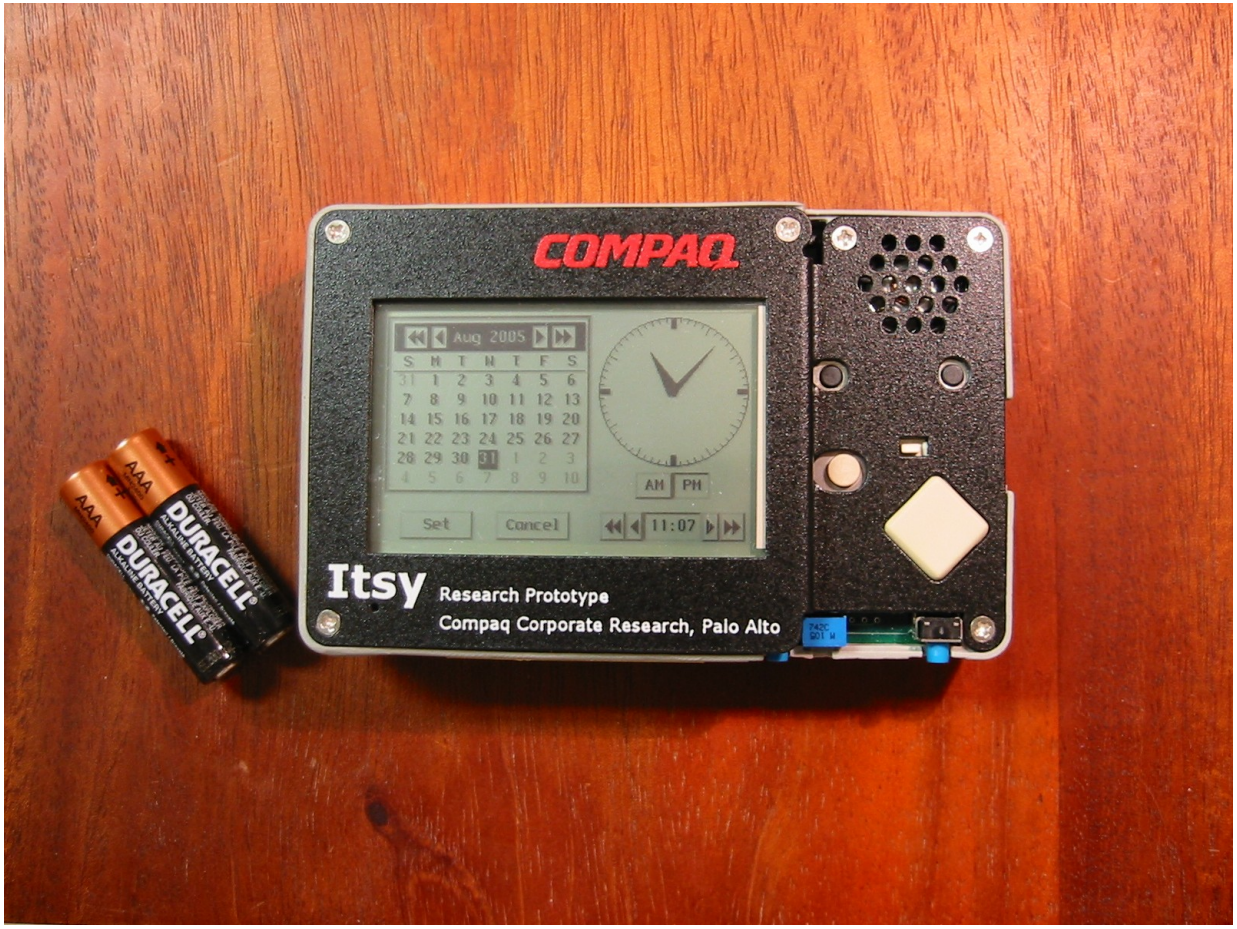
KDE


emacs: kscre...
(file:/scratch/...
file:/scratch/k...
Konsole
(The GIMP <2>)
KDE - Scree...
(Mail client)
The GIMP
(file:/home/perr...
Trash
Templates
Autostart
netscape
gimp
xemacs
nedit
x11amp
Super User
CD-ROM
Teac
Floppy
Epson Stylus Pro
kdecvs
kde111
QT 1.42 doc
QT 2.0 doc
HOWTO
SelfHTML
GNU doc
srcdoc
Konsole
File Sessions Options Help
perry@delta:~ > cd /usr/lib/qt2/
perry@delta:/usr/lib/qt2 > ls
LICENSE.QPL configs extensions include src
Makefile doc gif lib tutorial
bin examples html propagate variables
perry@delta:/usr/lib/qt2 >
file:/scratch/kdecvs/
File Edit View Go Bookmarks Cache Options Help
Location: file:/scratch/kdecvs/
Root
My Home
Desktop
CVS/
KodeKnight/
corba/
kdeadmin/
kdebase/
kdegames/
kdegraphics/
kdelibs/
kdemultimedia/
kdesupport/
kdeutils/
khelpcenter/
klyx/
korganizer/
www/
Open Folder
applnk/
apps/
config/
doc/
icons/
locale/
mimelnk/
sounds/
toolbar/
wallpapers/
Shared:
CD-ROM/
KDE/
Root/
Personal:
Desktop/
Home/
Recent:
KMail
netscape
Home
konsole
Options...
Open Folder
bin/
cgi-bin/
include/
lib/
share/
One
Two
Three
Four
11:43
Mar 07

Gnome

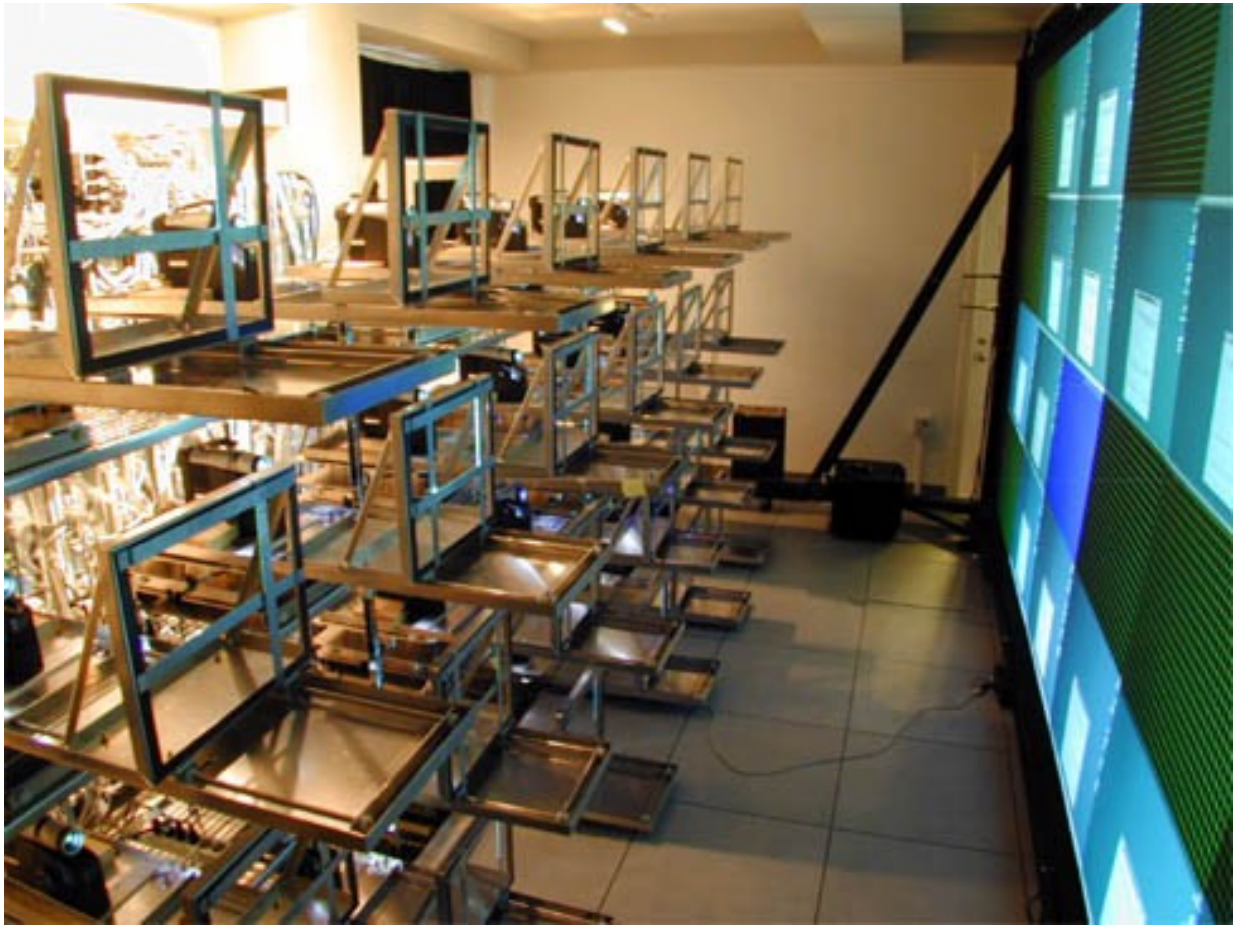

Applications Places Desktop
Wed Mar 9, 04:06
Copy Time
Copy Date
Adjust Date & Time
Preferences
Help
About
Remove From Panel
Lock To Panel
Move
cdrom
LiveCD Overview (start here!).abw
Documents on GNOME and Free Software
Images from GNOME community events
Video and Music from Creative Commons
A Sneak Peek at GNOME 2.10
GNOME Project overview.abw
Time and Date Settings
Time and date settings
Use this tool for setting your current date, time and time zone
Time Configuration
Time: 04 : 06 : 43
Date: March 2005
Sun Mon Tue Wed Thu Fri Sat
Time zone: (unconfigured)
Select Time Zone...
Synchronize clock with Internet servers:
Select Servers...
Help
Cancel
OK
GNOME 2.10 LiveCD
Time and...

Smaller Systems



Bigger Systems

Bigger Systems



The X.org Foundation

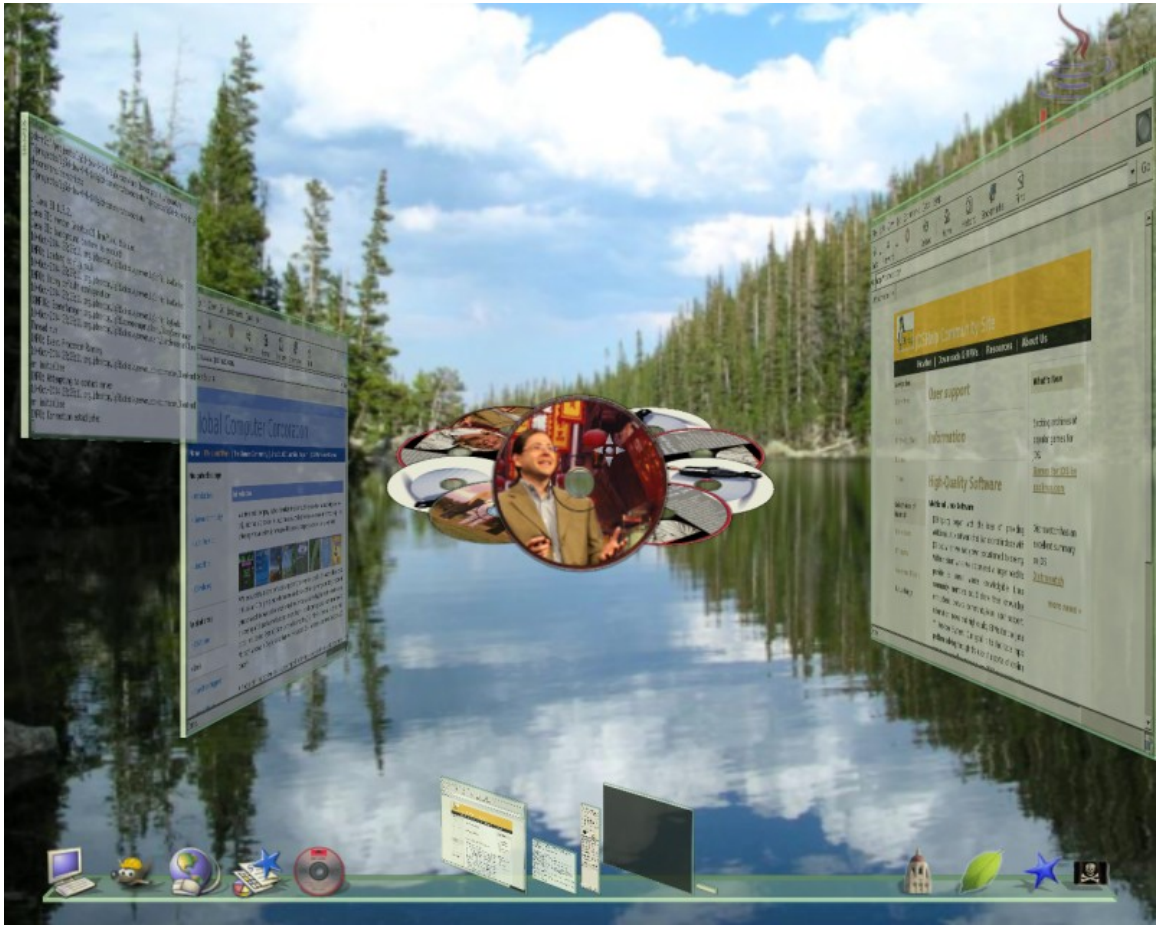
- Community governance of X
-

New Experiments

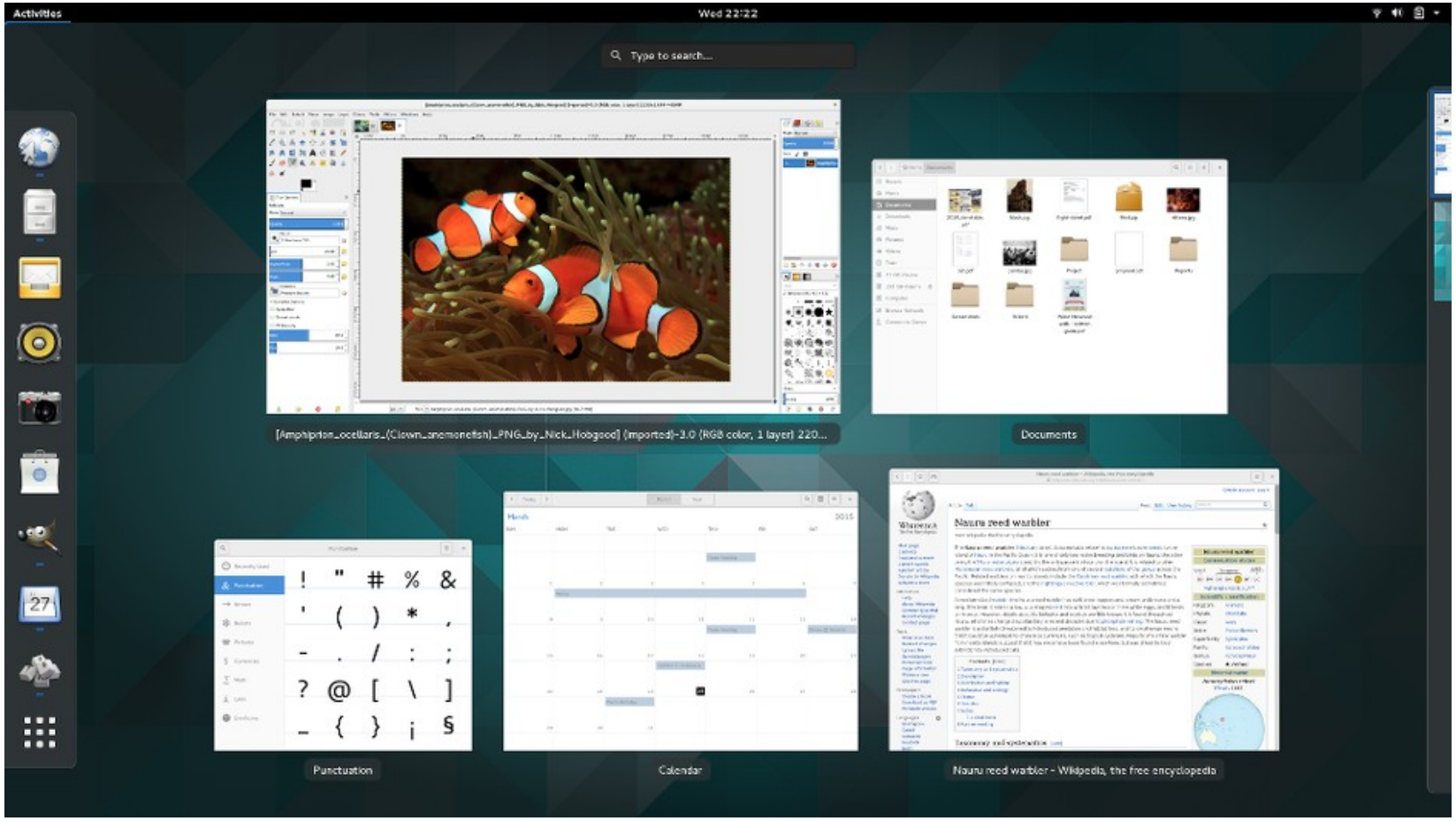
Rewriting X

- Render Extension
- Composite extension
- X Input version 2
- X Resize and Rotate

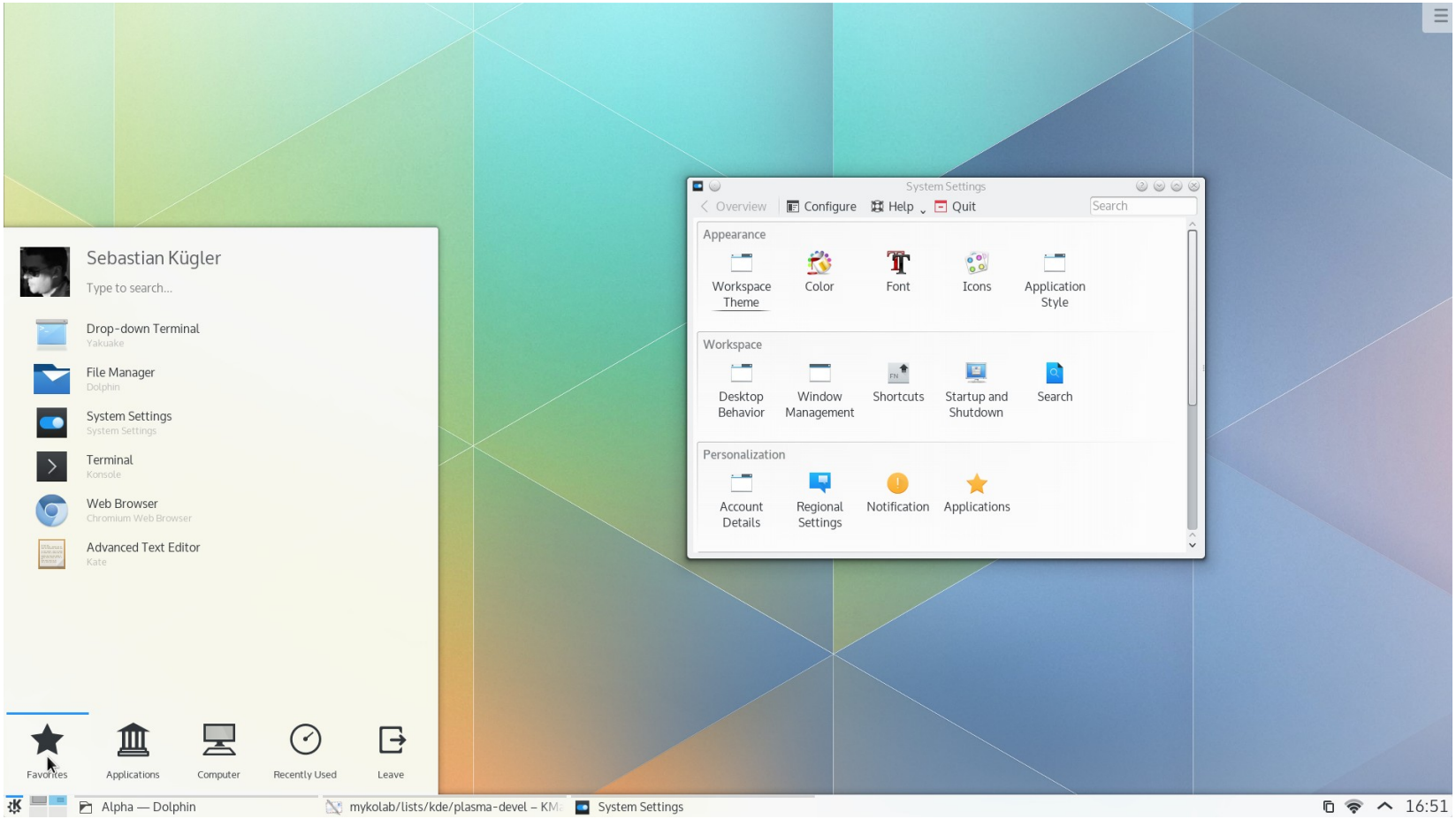
New Experiments



New Gnome


Activities
Wed 22:22
Type to search...
[Amphiprion_ocellaris_(Clown_anemonefish)_PNG_by_Nick_Hobgood] (imported)-3.0 (RGB color, 1 layer) 220...
Documents
Punctuation
Calendar
Nauru reed warbler - Wikipedia, the free encyclopedia

New KDE


Sebastian Kügler
Type to search...
Drop-down Terminal
Yakuake
File Manager
Dolphin
System Settings
System Settings
Terminal
Konsole
Web Browser
Chromium Web Browser
Advanced Text Editor
Kate
Favorites
Applications
Computer
Recently Used
Leave
System Settings
Overview
Configure
Help
Quit
Search
Appearance
Workspace Theme
Color
Font
Icons
Application Style
Workspace
Desktop Behavior
Window Management
Shortcuts
Startup and Shutdown
Search
Personalization
Account Details
Regional Settings
Notification
Applications
Alpha — Dolphin
mykolab/lists/kde/plasma-devel – KM
System Settings
16:51

Reimplementing X

- New kernel code
  - Kernel mode setting
  - Graphics execution manager
- Hardware-independent X driver
  - Glamor for drawing (based on OpenGL/GLES)
  - Modesetting for display config (based on KMS)

Lessons (mostly) learned

- GPL licenses are better than BSD licenses
- Network-based collaboration works
- Build the simplest possible system
- Make it extensible